



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,266	05/04/2006	Mikko Karttunen	3501-1113	2093
466	7590	12/27/2007		
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			EXAMINER ROBINSON, ELIZABETH A	
			ART UNIT 1794	PAPER NUMBER
			MAIL DATE 12/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,266	<b>Applicant(s)</b> KARTTUNEN ET AL.	
	<b>Examiner</b> Elizabeth Robinson	<b>Art Unit</b> 1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 27-49 are currently pending.

#### ***Claim Rejections - 35 USC § 103***

Claims 27-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirjavainen (WO 2001/19596), in view of Lee et al. (WO 2001/72885), as evidenced by POSS Molecules product literature.

Regarding claims 27, 28, 40 and 41, Kirjavainen (Page 2, lines 19-28) teaches a method of making a porous plastic film comprising a plastic material (polymer-containing basic material) and a material mixed into the plastic (additive). This material is extruded (stretchable perform) and then biaxially stretched to form cavitation bubbles (pores). Kirjavainen (Page 3, lines 30-31) further teaches that the film can be provided with a permanent electric charge using the corona charge method. Kirjavainen (Page 7, lines 21-34) teaches that the additive is calcium carbonate particles, but that other materials can be used in place of the calcium carbonate particles, as long as they form the cavitation bubbles in the material. Kirjavainen does not teach using a POSS chemical as the additive. Lee (Page 3, lines 20-23) teaches nanostructured POSS chemicals. These POSS chemicals are added into a polymer in order to improve the physical properties of the polymer including thermal properties and porosity (Claims 9 and 10, pages 14 and 15). The POSS particles (Page 3, lines 7 through 9) are

monodisperse and have controlled particle sizes. Lee (Page 5, lines 12-14) teaches that due to their chemical nature, the POSS chemicals can be tailored to show either compatibility or incompatibility with nearly all polymer systems. The POSS Molecules product literature (POSS Description section) teaches that when mixed with virtually any polymer the POSS molecules will bond to one another. Thus, the POSS chemical will at least in part be in agglomerates. It would be obvious to one of ordinary skill in the art to use the POSS chemicals of Lee, as the additives to the film of Kirjavainen, in order to produce a film with controlled pore sizes and porosity that has improved thermal properties. As taught by Lee, the POSS chemicals can be tailored to a desired degree of incompatibility, which would allow the joint surface of the plastic and the POSS to tear when the plastic is stretched, forming the cavitation bubbles.

Regarding claims 29 and 42, Kirjavainen does not explicitly teach the draw ratio. However, Kirjavainen (Page 4, lines 12-15) teaches that after the preform is extruded, the film is guided to a machine orientation device with rollers whose velocities can be adjusted to stretch the film. The velocity of the rollers would be a result effective variable that would determine the draw ratio and thus the pore size of the finished film. It would be obvious to one of ordinary skill in the art to adjust the velocity of the rollers in order to obtain a film with a desired pore size and thus, draw ratio.

Regarding claims 30 and 33, Lee (Page 8, lines 11-12) teaches that the POSS chemicals are available as both solids and oils (liquids). Kirjavainen (Page 7, lines 21-34) teaches that the additive can be a solid particle or an oily substance such as a silicone oil. The choice of solid or oil depends on the desired properties of the film such

as uniformity of the electric field. It would be obvious to one of ordinary skill in the art to use either form of POSS as the additive to the film depending on the desired properties of the film.

Regarding claims 31 and 32, Lee (Page 12, lines 5-7) teaches that the POSS chemicals can be compounded into the polymer by a variety of blending techniques including melt blending and dry blending.

Regarding claims 34 and 44, Lee (Page 6, lines 12-16) teaches that Octamethyl POSS and Octaisobutyl POSS can be used to reinforce polypropylenes. Lee (Page 6, line 22 through Page 7, line 21) further teaches other POSS chemicals that are usable as additives to polymers.

Regarding claims 35 and 45, Kirjavainen (Page 7, lines 34-35) teaches that the plastic film can be made from polypropylene, polymethylpentene or cyclic olefin copolymer.

Regarding claim 36, Kirjavainen (Page 8, lines 24-25) teaches that the plastic film can be as thin as 10 micrometers.

Regarding claim 37, Lee (Page 6, lines 12-16) teaches adding the POSS chemical at 10 wt.%.

Regarding claim 38, Kirjavainen (Page 8, lines 7-14) teaches that the pores are expanded with gas.

Regarding claims 39 and 46, Kirjavainen (Page 8, lines 26-30) teaches that the plastic film can be provided with an electrically conductive coating.

Regarding claim 43, Kirjavainen (Page 8, lines 7-14) teaches the pores are bubbles containing gas and are thus, closed pores.

Regarding claim 47, the film has the same structure (porous film that has been provided with an electrical charge with an electrically conductive coating) as in the instant case and thus, inherently is an electromechanical or electret film.

Regarding claims 48 and 49, these would be inherent properties of films of this configuration.

### ***Response to Arguments***

Applicant's arguments filed October 15, 2007 have been fully considered but they are not persuasive.

Regarding Applicant's argument that Lee does not teach using POSS chemicals as a cavitation agent, Lee (Page 5, lines 12-14) teaches that the POSS chemicals can be tailored to be incompatible with a polymer system. This incompatibility would allow them to function as cavitation agents.

Regarding Applicant's arguments that the particles will not agglomerate, Lee teaches that the POSS will not agglomerate to such a degree that it will not be well dispersed. However, as evidenced by the POSS Molecules product literature there will be some degree of agglomeration when a POSS is mixed into virtually any polymer system.

Due to the claim amendments, the 35 U.S.C. 112, second paragraph, rejection from the June 12, 2007 Office Action are withdrawn.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Robinson whose telephone number is 571-272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ear



**CAROL CHANEY**  
SUPERVISORY PATENT EXAMINER